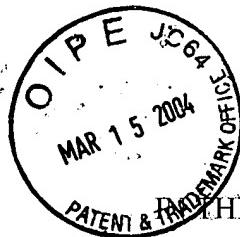


## UNITED STATES PATENT AND TRADEMARK OFFICE

(Case No. 02,276-A)



THE APPLICATION OF: )  
 )  
 McCullum, et al. )  
 )  
 Serial No. 10/691,374 ) Examiner: To Be Assigned  
 )  
 Filed: October 23, 2003 ) Group Art Unit: To Be Assigned  
 )  
 Title: Tomatoes Having Reduced )  
 Polygalacturonase Activity Caused by )  
 Non-Transgenic Mutations in the )  
 Polygalacturonase Gene. )

## TRANSMITTAL LETTER

Commissioner for Patents  
 P.O. Box 1450  
 Alexandria, VA 22313-1450

Sir:

In regard to the above identified application:

1. We are transmitting herewith the attached:

- a. Information Disclosure Statement;
- b. Form PTO-1449;
- c. Copy of IDS Citations 10/691,374 (44 references);
- d. Return Receipt Postcard.

2. With respect to additional fees:

No additional fee is required.

3. Please charge any additional fees or credit overpayment to Deposit Account No.13-2490.  
 A duplicate copy of this sheet is enclosed.
4. CERTIFICATE OF MAILING UNDER 37 CFR § 1.8: The undersigned hereby certifies that this Transmittal Letter and the papers, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450 Alexandria, VA 22313-1450 on this 12<sup>th</sup> day of March, 2004.

By:

Alison J. Baldwin  
 Reg. No. 48,968



PATENT

**UNITED STATES PATENT AND TRADEMARK OFFICE**  
(Case No. 02,276-A)

IN THE APPLICATION OF: )  
McCallum, et al. )  
Serial No. 10/691,374 ) Examiner: To Be Assigned  
Filed: October 23, 2003 ) Group Art Unit: To Be Assigned  
Title: Tomatoes Having Reduced )  
Polygalacturonase Activity Caused )  
by Non-Transgenic Mutations in the )  
Polygalacturonase Gene. )

## **INFORMATION DISCLOSURE STATEMENT**

Box DD  
Commissioner for Patents  
Washington, D.C. 20231-9999

Dear Sir:

Pursuant to the duty of disclosure provided by 35 C.F.R. § 1.56 and §§ 1.97-98, the applicants wish to make the following references of record in the above-identified application. Copies of the references are enclosed. Copies are also listed in the PTO-1449 form enclosed herewith. It is requested that the documents be given careful consideration and that they be cited of record in the prosecution history of the present application so that they will appear on the face of the patent issuing from the present application.

Portions of the references may be material to the examination of the pending claims, however no such admission is intended. 37 C.F.R. 1.97 (h). The references have not been reviewed in sufficient detail to make any other representation and, in particular,

no representation is intended as to the relative importance of any portion of the references. This Statement is not a representation that the cited references have effective dates early enough to be "prior art" within the meaning of 35 U.S.C. sections 102 or 103, nor is this submission to be construed as a representation that a search has been made.

### **CITED REFERENCES**

#### **U.S. Patent Documents**

<u>Document Number</u>	<u>Date</u>	<u>Name</u>	<u>Class</u>	<u>Filing Date If Appropriate</u>
4,801,540	01/31/1989	Hiatt, et al.		01/02/1987
5,107,065	04/21/1992	Shewmaker, et al.		08/30/1988
5,387,747	02/07/1995	Bru-Magniez, et al.		02/18/1993
5,413,937	05/09/1995	Bridges, et al.		12/07/1993
5,442,052	08/15/1995	Bird, et al.		11/07/1991
5,453,566	09/26/1995	Shewmaker, et al.		08/27/1991
5,569,831	10/29/1996	DellaPenna		07/11/1994
5,759,829	06/02/1998	Shewmaker, et al.		05/05/1995
5,994,075	11/30/1999	Goodfellow, et al.		05/16/1997

#### **Foreign Patent Documents**

<u>Document Number</u>	<u>Date</u>	<u>Country</u>	<u>Class</u>	<u>Translation Yes/No</u>
WO 0063347		PCT		

#### **Other Documents**

1. AJ Hamilton, "Sense And Antisense Inactivation Of Fruit Ripening Genes In Tomato", Current Topics In Microbiol Immunol", Vol. 197, Pages 77-89, 1995.
2. Ali, et al., "Purification and Characterization of the Polygalacturonases of Tomato Fruits", Aust J. Plant Physiol, Vol. 9, Pages 155-169, 1982.
3. Anthon, et al., "Thermal Inactivation of Pectin Methyl esterase, Polygalacturonase, and Peroxidase in Tomato Juice", Journal of Agricultural and Food Chemistry, Vol. 50, Pages 6153-6159, 2002.

4. Bird, et al., "The Tomato Polygalacturonase Gene and Ripening-Specific Expression In Transgenic Plants", *Plant Mol. Biol.*, Vol. 11, Pages 651-662, 1988.
5. Cantwell, M., "Report to the California Tomato Commission: Tomatoe Variety Trials: Postharvest Evaluations for 2001", January 8, 2002.
6. Chen, et al., "A Rapid DNA Minipreparation Method Suitable for AFLP and Other PCR Applications", *Plant Molecular Biology Reporter*, V. 17, Pages 53-57, 1999.
7. Colbert, et al., "High-Throughput Screening for Induced Point Mutations", *Plant Physiology*, Vol. 126, Pages 480-484, June 2001.
8. Cooley, et al., "Insertional Inactivation Of The Tomato Polygalacturonase Gene", *J.I., Plant Mol. Biol.*, Vol. 38 (4) Pages 521-530, 1998.
9. Cooley, et al., "Site-Selected Insertional Mutagenesis Of Tomato With Maize Ac And Ds Elements", *Mol. Gen. Genet.*, Vol. 252 (1-2), Pages 184-194, 1996.
10. CJ Smith, et al., "Expression Of A Truncated Tomato Polygalacturonase Gene Inhibits Expression Of The Endogenous Gene In Transgenic Plants", *Mol. Gen. Genet.* Vol. 224(3), Pages 477-481, 1990.
11. D. Grierson, "cDNA Clone For Tomato Polygalacturonase", *Nucleic Acids Res.*, Vol. 14 (21), Pages 8595-8603, November 11, 1986.
12. DA Brummell, "Cell Wall Metabolism In Fruit Softening And Quality And Its Manipulation In Transgenic Plants", *Plant Mol. Biol.*, Vol. 47(1-2), Pages 311-340, September 2001.
13. Della Peña, et al., "Molecular Cloning of Tomato Fruit Polygalacturonase: Analysis of Polygalacturonase mRNA Levels During Ripening", *Proc. Natl. Acad. Sci. U.S.A.*, Vol. 83, Pages 6420-6424, 1986.
14. Edan, Y., "Color and Firmness Classification of Fresh Market Tomatoes", *Journal of Food Science*, Vol. 62(4) Pages 793-796, 1997.
15. Errington, N., "Changes in the force relaxation and compression responses of tomatoes during ripening: The Effect of Continual Testing and Polygalacturonase Activity", *Postharvest Biology and Technology*, Vol. 11, 141-147, 1997.
16. Fachin, et al., "Thermal and High-Pressure Inactivation of Tomato Polygalacturonase: A Kinetic Study", *Journal of Food Science*, Vol. 67, Pages 1610-1615, 2002.
17. Henikoff, et al., "Increased Coverage of Protein Families With the Blocks Database Servers", *Nucl. Acids Res.* Vol. 28, Pages 228-230, 2000.
18. Henikoff, et al., "Blocks+: A Non-Redundant Database Of Protein Alignment Blocks Derived From Multiple Compilations", *Bioinformatics* Vol. 15(6), Pages 471-479, 1999.

19. Henikoff, et al., "Automated Construction And Graphical Presentation Of Protein Blocks From Unaligned Sequences", Gene, ISSN 0378-1119 Amsterdam, Elsevier, Vol. 163, Pages GC17-GC26, 1995.
20. Kalaitzis, et al., "Three Different Polygalacturonases Are Expressed In Tomato Leaf And Flower Abscission, Each With A Different Temporal Expression Pattern", Plant Physiol, Vol. 113, Pages 1303-1308, 1997.
21. Kramer, et al., "Postharvest Evaluation Of Transgenic Tomatoes With Reduced Levels Of Polygalacturonase: Processing, Firmness And Disease Resistance", Postharvest Biology and Technology Vol. 1, Pages 241-255, 1992.
22. Lesage, et al., "Measurement of Tomato Firmness by Using a Non-Destructive Mechanical Sensor", Postharvest Biology and Technology, Vol. 8, Pages 45-55, 1996.
23. Li, et al., "Integrated Platform For Detection of DNA Sequence Variants Using Capillary Array Electrophoresis", Electrophoresis, Vol. 23(10), Pages 1499-1511, May 2002.
24. McCallum, et al., "Targeted Screening for Induced Mutations", Nature Biotechnology, Vol. 18, Pages 455-457, April 2000.
25. McCallum, et al., "Targeting Induced Local Lesions IN Genomes (Tilling) For Plant Functional Genomics", Plant Physiology, Vol. 123, Pages 439-442, June 2000.
26. Neff, et al., "dCAPS, A Simple Technique For The Genetic Analysis of Single Nucleotide Polymorphisms: Experimental Applications In Arabidopsis Thaliana Genetics", The Plant Journal, Vol. 14, Pages 387-392, 1998.
27. Olejowski, et al., "Mutation Detection Using a Novel Plant Endonuclease", Nucleic Acids Research, Vol. 26, Pages 4597-4602, 1998.
28. Préssey, "Reevaluation Of The Changes In Polygalacturonases In Tomatoes During Ripening", Planta, Vol. 174, Pages 39-43, 1988.
29. Ju, et al., "Cloning Of Polygalacturonase (PG) CdnA And Inhibition Effects Of Its Antisense RNA On The Expression Of PG Gene In Transgenic Tomato Plants", Chin J. Biotechnol, Vol. 10(2), Pages 67-74, 1994.
30. Sheehy, et al., "Reduction of Polygalacturonase Activity in Tomato Fruit by Antisense RNA", PNAS, Vol. 85, Page 8805-8809, 1988.
31. Sitrit and Bennett, "Regulation Of Tomato Fruit Polygalacturonase mRNA Accumulation By Ethylene: A Re-Examination. Plant Physiol", Vol. 116, Pages 1145-1150, 1998.
32. Stewart, et al., "A Rapid CTAB DNA Isolation Technique Useful for RAPD Fingerprinting and Other PCR Applications", Bio Techniques, V. 14(5), Pages 748-749, 1993.

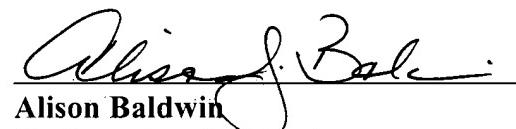
33. Vrebalov, et al., "A MADS-Box Gene Necessary for Fruit Ripening at the Tomato Ripening – inhibitor (Rin) Locus", Science, Vol. 296, Pages 343-346, 2002.
34. Zheng, et al., "Differential Expression of the Two Subunits of Tomato Polygalacturonase Isoenzyme 1 in Wild-Type and Rin Tomato Fruit", Plant Physiol., Vol. 105, Pages 1189-1195, 1994.

Respectfully submitted,

**McDonnell Boehnen Hulbert & Berghoff**

Date: 3/12/04

By:

  
**Alison Baldwin**  
Registration No. 48,968

Form PTO-1449 (modified)

MAR 15 2004

Atty. Docket No.

02,276-A

Serial No.

10/691,374

List of Patents and Publications

PATENT &amp; TRADEMARK OFFICE

Applicant

## INFORMATION DISCLOSURE STATEMENT

(Use several sheets if necessary)

McCallum, et al.

Filing Date:  
October 23, 2003Group:  
Unknown

## U.S. Patent Documents

See Page 1

## Foreign Patent Documents

Page 1

## Other Art

See Pages 1-4

## U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date of App.
	A1	4,801,540	01/31/1989	Hiatt, et al.			01/02/1987
	A2	5,107,065	04/21/1992	Shewmaker, et al.			08/30/1988
	A3	5,387,747	02/07/1995	Bru-Magniez, et al.			02/18/1993
	A4	5,413,937	05/09/1995	Bridges, et al.			12/07/1993
	A5	5,442,052	08/15/1995	Bird, et al.			11/07/1991
	A6	5,453,566	09/26/1995	Shewmaker, et al.			08/27/1991
	A7	5,569,831	10/29/1996	DellaPenna			07/11/1994
	A8	5,759,829	06/02/1998	Shewmaker, et al.			05/05/1995
	A9	5,994,075	11/30/1999	Goodfellow, et al.			05/16/1997

## Foreign Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Country	Class	Sub Class	Translation Yes/No
	B1	WO 0063347	10/26/2000	PCT			
	B2						
	B3						

## Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C1	AJ Hamilton, "Sense And Antisense Inactivation Of Fruit Ripening Genes In Tomato", Current Topics In Microbiol Immunol", Vol. 197, Pages 77-89, 1995.
	C2	Ali, et al., "Purification and Characterization of the Polygalacturonases of Tomato Fruits", Aust J. Plant Physiol, Vol. 9, Pages 155-169, 1982.
	C3	Anthon, et al., "Thermal Inactivation of Pectin Methyl esterase, Polygalacturonase, and Peroxidase in Tomato Juice", Journal of Agricultural and Food Chemistry, Vol. 50, Pages 6153-6159, 2002.

EXAMINER:

DATE CONSIDERED:

EXAMINER: INITIAL IF REFERENCE CONSIDERED, WHETHER OR NOT CITATION IS IN CONFORMANCE WITH MPEP609; DRAW LINE THROUGH CITATION IF NOT IN CONFORMANCE AND NOT CONSIDERED. INCLUDE COPY OF THIS FORM WITH NEXT COMMUNICATION TO APPLICANT.

INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

Form PTO-1449 (modified)		Atty. Docket No. 02,276-A	Serial No. 10/691,374
<b>List of Patents and Publications for Applicant's</b>		Applicant McCallum, et al.	
INFORMATION DISCLOSURE STATEMENT  (Use several sheets if necessary)		Filing Date: October 23, 2003	Group: Unknown
<b>U.S. Patent Documents</b> <i>See Page 1</i>	<b>Foreign Patent Documents</b> <i>Page 1</i>	<b>Other Art</b> <i>See Pages 1-4</i>	

### Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C4	Bird, et al., "The Tomato Polygalacturonase Gene and Ripening-Specific Expression In Transgenic Plants", Plant Mol. Biol., Vol. 11, Pages 651-662, 1988.
	C5	Cantwell, M., "Report to the California Tomato Commission: Tomatoe Variety Trials: Postharvest Evaluations for 2001", January 8, 2002.
	C6	Chen, et al., "A Rapid DNA Minipreparation Method Suitable for AFLP and Other PCR Applications", Plant Molecular Biology Reporter, V. 17, Pages 53-57, 1999.
	C7	Colbert, et al., "High-Throughput Screening for Induced Point Mutations", Plant Physiology, Vol. 126, Pages 480-484, June 2001.
	C8	Cooley, et al., "Insertional Inactivation Of The Tomatoe Polygalacturonase Gene", J.I., Plant Mol. Biol., Vol. 38 (4) Pages 521-530, 1998.
	C9	Cooley, et al., "Site-Selected Insertional Mutagenesis Of Tomato With Maize Ac And Ds Elements", Mol. Gen. Genet., Vol. 252 (1-2), Pages 184-194, 1996.
	C10	CJ Smith, et al., "Expression Of A Truncated Tomato Polygalacturonase Gene Inhibits Expression Of The Endogenous Gene In Transgenic Plants", Mol. Gen. Genet. Vol. 224(3), Pages 477-481, 1990.
	C11	D. Grierson, "cDNA Clone For Tomato Polygalacturonase", Nucleic Acids Res., Vol. 14 (21), Pages 8595-8603, November 11, 1986.
	C12	DA Brummell, "Cell Wall Metabolism In Fruit Softening And Quality And Its Manipulation In Transgenic Plants", Plant Mol. Biol., Vol. 47(1-2), Pages 311-340, September 2001.
	C13	Della Penna, et al., "Molecular Cloning of Tomato Fruit Polygalacturonase: Analysis of Polygalacturonase mRNA Levels During Ripening", Proc. Natl. Acad. Sci. U.S.A., Vol. 83, Pages 6420-6424, 1986.
	C14	Edan, Y., "Color and Firmness Classification of Fresh Market Tomatoes", Journal of Food Science, Vol. 62(4) Pages 793-796, 1997.
	C15	Errington, N., "Changes in the force relaxation and compression responses of tomatoes during ripening: The Effect of Continual Testing and Polygalacturonase Activity", Postharvest Biology and Technology, Vol. 11, Pages 141-147, 1997.
	C16	Fachin, et al., "Thermal and High-Pressure Inactivation of Tomato Polygalacturonase: A Kinetic Study", Journal of Food Science, Vol. 67, Pages 1610-1615, 2002.
	C17	Henikoff, et al., "Increased Coverage of Protein Families With the Blocks Database Servers", Nucl. Acids Res. Vol. 28, Pages 228-230, 2000.
	C18	Henikoff, et al., "Blocks+: A Non-Redundant Database Of Protein Alignment Blocks Derived From Multiple Compilations", Bioinformatics Vol. 15(6), Pages 471-479, 1999.
	C19	Henikoff, et al., "Automated Construction And Graphical Presentation Of Protein Blocks From Unaligned Sequences", Gene, ISSN 0378-1119 Amsterdam, Elsevier, Vol. 163, Pages GC17-GC26, 1995.

EXAMINER:

DATE CONSIDERED:

EXAMINER: INITIAL IF REFERENCE CONSIDERED, WHETHER OR NOT CITATION IS IN CONFORMANCE WITH MPEP609; DRAW LINE THROUGH CITATION IF NOT IN CONFORMANCE AND NOT CONSIDERED. INCLUDE COPY OF THIS FORM WITH NEXT COMMUNICATION TO APPLICANT.

Form PTO-1449 (modified)		Atty. Docket No. 02,276-A	Serial No. 10/691,374
<b>List of Patents and Publications for Applicant's</b>		Applicant <b>McCallum, et al.</b>	
INFORMATION DISCLOSURE STATEMENT  (Use several sheets if necessary)		Filing Date: October 23, 2003	Group: Unknown
<b>U.S. Patent Documents</b>  <i>See Page 1</i>	<b>Foreign Patent Documents</b>  <i>Page 1</i>	<b>Other Art</b>  <i>See Pages 1-4</i>	

### Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C20	Kalaitzis, et al., "Three Different Polygalacturonases Are Expressed In Tomato Leaf And Flower Abscission, Each With A Different Temporal Expression Pattern", Plant Physiol, Vol. 113, Pages 1303-1308, 1997.
	C21	Kramer, et al., "Postharvest Evaluation Of Transgenic Tomatoes With Reduced Levels Of Polygalacturonase: Processing, Firmness And Disease Resistance", Postharvest Biology and Technology Vol. 1, Pages 241-255, 1992.
	C22	Lesage, et al., "Measurement of Tomato Firmness by Using a Non-Destructive Mechanical Sensor", Postharvest Biol. Tech., Vol. 8, Pages 45-55, 1996.
	C23	Li, et al., "Integrated Platform For Detection of DNA Sequence Variants Using Capillary Array Electrophoresis", Electrophoresis, Vol. 23(10), Pages 1499-1511, May 2002.
	C24	McCallum, et al., "Targeted Screening for Induced Mutations", Nature Biotechnology, Vol. 18, Pages 455-457, April 2000.
	C25	McCallum, et al., "Targeting Induced Local Lesions IN Genomes (Tilling) For Plant Functional Genomics", Plant Physiology, Vol. 123, Pages 439-442, June 2000.
	C26	Neff, et al., "dCAPS, A Simple Technique For The Genetic Analysis of Single Nucleotide Polymorphisms: Experimental Applications In Arabidopsis Thaliana Genetics", The Plant Journal, Vol. 14, Pages 387-392, 1998.
	C27	Oleykowski, et al., "Mutation Detection Using a Novel Plant Endonuclease", Nucleic Acids Research, Vol. 26, Pages 4597-4602, 1998.
	C28	Pressey, "Reevaluation Of The Changes In Polygalacturonases In Tomatoes During Ripening", Planta, Vol. 174, Pages 39-43, 1988.
	C29	R. Ju, et al., "Cloning Of Polygalacturonase (PG) Cdna And Inhibition Effects Of Its Antisense RNA On The Expression Of PG Gene In Transgenic Tomato Plants", Chin J. Biotechnol, Vol. 10(2), Pages 67-74, 1994.

EXAMINER:

DATE CONSIDERED:

EXAMINER: INITIAL IF REFERENCE CONSIDERED, WHETHER OR NOT CITATION IS IN CONFORMANCE WITH MPEP609; DRAW LINE THROUGH CITATION IF NOT IN CONFORMANCE AND NOT CONSIDERED. INCLUDE COPY OF THIS FORM WITH NEXT COMMUNICATION TO APPLICANT.

*INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)*

Form PTO-1449 (modified)		Atty. Docket No. 02,276-A	Serial No. 10/691,374
<b>List of Patents and Publications for Applicant's</b>		<b>Applicant</b>	
INFORMATION DISCLOSURE STATEMENT  (Use several sheets if necessary)		McCallum, et al.	
		Filing Date: October 23, 2003	Group: Unknown
<b>U.S. Patent Documents</b> <i>See Page 1</i>	<b>Foreign Patent Documents</b> <i>Page 1</i>	<b>Other Art</b> <i>See Pages 1-4</i>	

### **Other Art (Including Author, Title, Date Pertinent Pages, Etc.)**

<b>Exam. Init.</b>	<b>Ref. Des.</b>	<b>Citation</b>
	C30	Sheehy, et al., "Reduction of Polygalacturonase Activity in Tomato Fruit by Antisense RNA", PNAS, Vol. 85, Page 8805-8809, 1988.
	C31	Sitrit and Bennett, "Regulation Of Tomato Fruit Polygalacturonase mRNA Accumulation By Ethylene: A Re-Examination. Plant Physiol", Vol. 116, Pages 1145-1150, 1998.
	C32	Stewart, et al., "A Rapid CTAB DNA Isolation Technique Useful for RAPD Fingerprinting and Other PCR Applications", Bio Techniques, V. 14(5), Pages 748-749, 1993.
	C33	Vrebalov, et al., "A MADS-Box Gene Necessary for Fruit Ripening at the Tomato Ripening – inhibitor (Rin) Locus", Science, Vol. 296, Pages 343-346, 2002.
	C34	Zheng, et al., "Differential Expression of the Two Subunits of Tomato Polygalacturonase Isoenzyme 1 in Wild-Type and Rin Tomato Fruit", Plant Physiol., Vol. 105, Pages 1189-1195, 1994.

**EXAMINER:**

**DATE CONSIDERED:**

EXAMINER: INITIAL IF REFERENCE CONSIDERED, WHETHER OR NOT CITATION IS IN CONFORMANCE WITH MPEP609; DRAW LINE THROUGH CITATION IF NOT IN CONFORMANCE AND NOT CONSIDERED. INCLUDE COPY OF THIS FORM WITH NEXT COMMUNICATION TO APPLICANT.

*INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)*